Derivation of sample for FSIQ analyses

613 → ≥8y at onset N=182

≤7 y at onset N=431

Did not participate in 9-year assessment N=76
11- deceased
46 – lost before assessment period
13 – refused
6 - other

Participation in 9y assessment at some level N=355

No Neuropsych testing N=128
Estimated cognitive level
69 – within NL (FISQ>=80)
6 – Borderline-mild ID (FSIQ 60-79)
37 – severe-profound ID
16 – impaired but level not clear

Neuropsych testing N=227

WAIS N=29

WISC N=198 Analytic sample

Figure e-1: Derivation of analytic sample

**Summary of selected study methods previously published elsewhere.**

Baseline questionnaires were completed by the parents of all children. The questionnaires covered socio-demographic factor, history and description of the unprovoked seizures, prior history of febrile, neonatal and other acutely provoked seizures, family history of epilepsy and seizures, child's school placement and whether he/she had ever been held back, and a checklist of developmental and educational diagnoses. For children under the age of 5 years at the time of the interview, the Vineland Scales of Adaptive Behavior (VABS) was administered to the parent as well.

Questionnaires at 8-9 years included information on school completion and current placement, use of special education resources (starting at what age, ending at what age, for each of the specific types offered by the school system), history of educational/medical diagnoses used in considering special education needs (e.g. developmental delay, dyslexia, autism etc), history of injuries, living arrangements, and driving (only if ≥16 years old). Parents of the younger study subjects (<17 years) also were invited to complete the Child Behavior Checklist (CBCL) which provides standardized scores for behavioral problems.[12]

Cognitive Assessment: At 8-9 years after study entry, participants were invited to take part in a standardized neurocognitive testing battery. For those who did not participate in this component, cognitive level was estimated from the following sources by order of preference: (1) standardized IQ testing performed by a school or private psychologist; (2) Standardized developmental and cognitive testing performed by a school or private psychologist or developmental specialist from a service agency that did not directly provide IQ scores but assessed level of function in other ways; (3) Other assessments of cognitive level from the medical records (e.g. "profoundly disabled, nonverbal child" or "doing very well in school, getting As in AP classes, admitted early to University") in conjunction with the parental report of school performance, utilization of special education services, and educational and medical diagnoses (see Berg et al. 2008). In the absence of standardized test scores, we did not attempt to categorize study subjects beyond performance consistent with IQ within the normal range (≥80) versus in the borderline to more impaired range (IQ<80).

Figure e-2: Scatter plots and regression lines for the association between age at onset and each of the four WISC domain scores (a) children whose epilepsy was not pharmacoresistant and (b) children with pharmacoresistant epilepsy
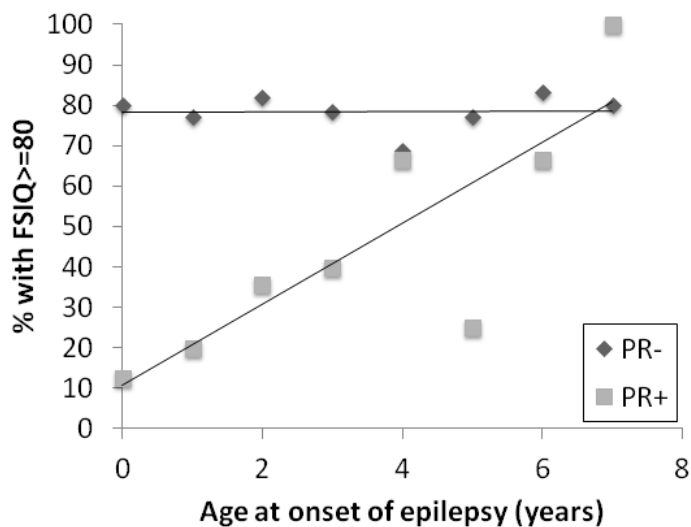
a

b
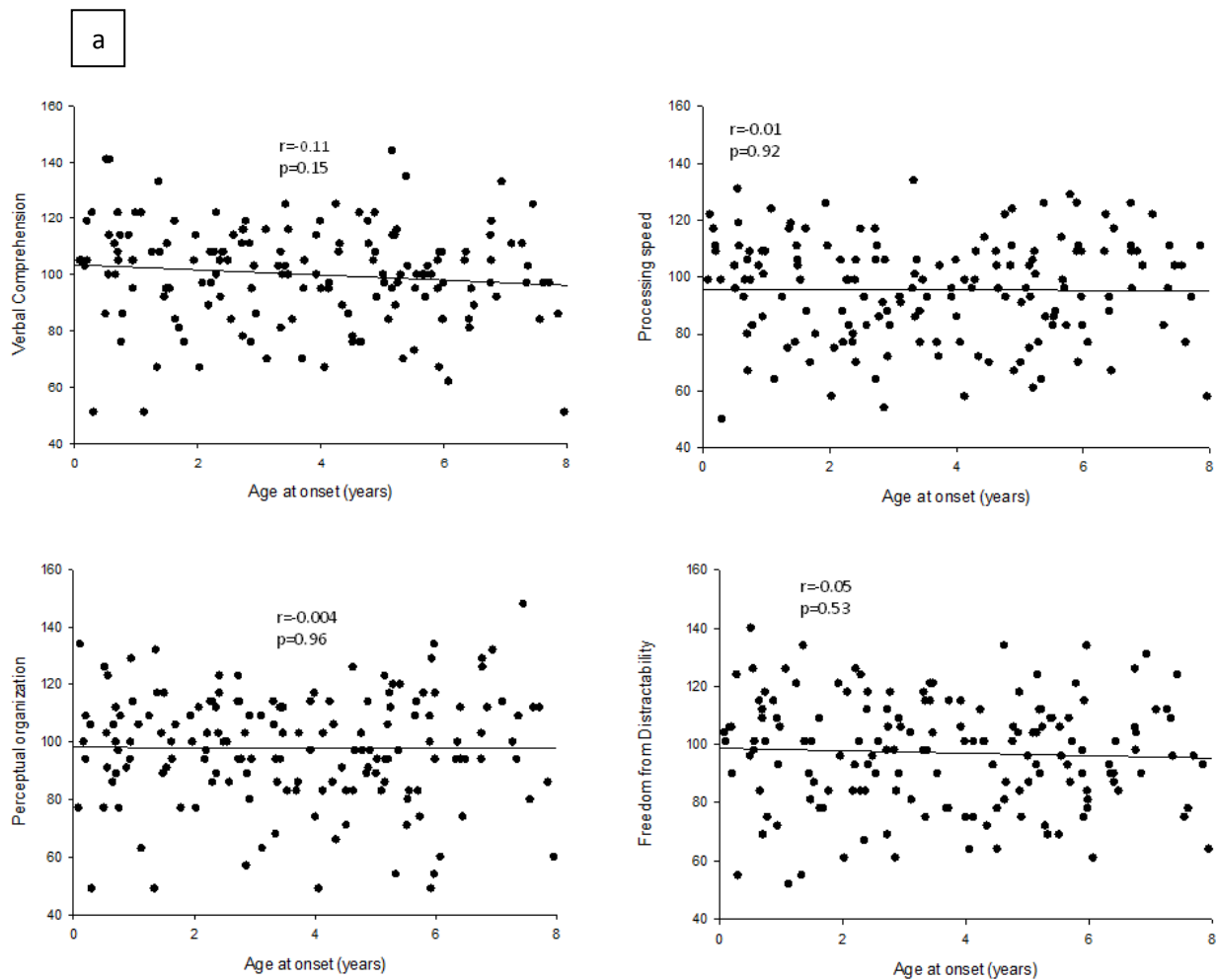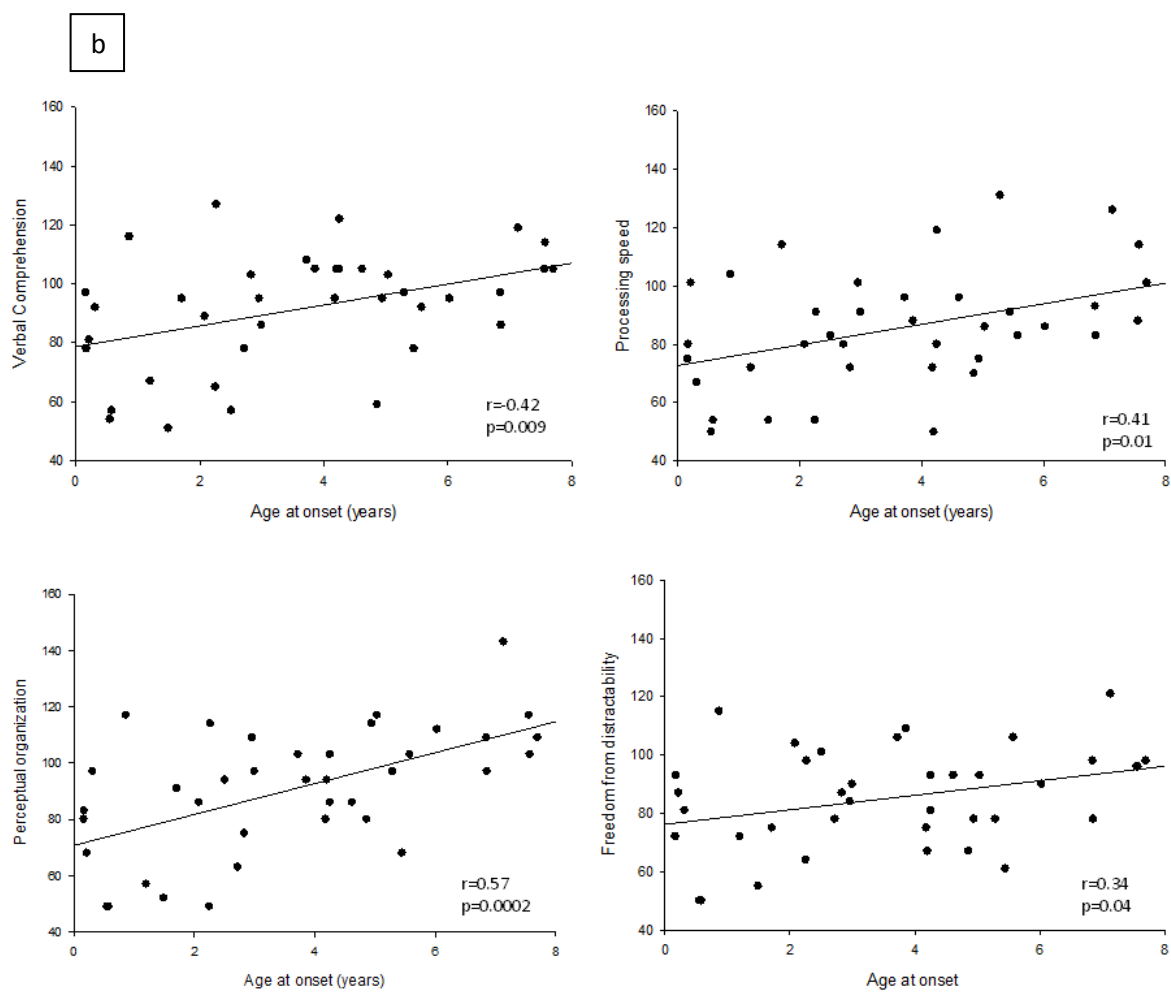
Figure e-3: Proportion of children with a full scale IQ (FSIQ) ≥80 by year of age at onset of epilepsy and by whether seizures were pharmacoresistant (PR+) or not pharmacoresistant (PR-) after exclusion of children with self-limited syndromes such as CAE and BECTS.). Children who did not participate in the cognitive testing battery were included in the data for this plot (N=247 total).

	Full Scale IQ	Processing speed	Verbal comprehension	Perceptual organization	Freedom from distractability
Positive imaging or exam	-7.45 (4.48) P=0.10	-5.60 (3.92) P=0.16	-5.24 (4.12) P=0.21	-8.93 (4.36) P=0.04	6.04 (4.19) P=0.15
Age of onset	-0.89 (0.87) 0.31	-0.67 (0.76) 0.38	-1.30 (0.80) P=0.11	0.21 (0.84) P=0.80	-0.88 (0.81) P=0.28
Pharmacoresistance	-26.33 (7.40) P=0.0005	-19.33 (6.47) P=0.003	-22.01 (6.81) P=0.002	-20.34 (7.20) P=0.005	-18.36 (6.92) P=0.009
Age*Pharmacoresistance	4.13 (1.92) P=0.03	2.92 (1.68) P=0.08	3.77 (1.76) P=0.03	3.57 (1.87) P=0.06	2.18 (1.79) P=0.23

Table e-1: Multiple linear regression results in the sample after exclusion of children with CAE, BECTS and related self-limited electro-clinical syndrome (N=145). Effect estimates (with standard error) for predicting cognitive scores nine years after initial diagnosis as a function of positive imaging or exam findings, age at onset, pharmacoresistance, and the interaction between pharmacoresistance and age.